SRI VENKATESWARA UNIVERSITY

B.Sc. DEGREE COURSE IN SERI CULTURE TECHNOLOGY

IV SEMESTER

(Syllabus under CBCS w.e.f. 2021-22)

PAPER- IV. SILKWORM PHYSIOLOGY AND REARING

Course Outcomes: By the completion of the course the graduate should able to –

CO1 : Explain the morphology and digestive system of silk worms,

CO2 : Describe the excretory system, nervous system and endocrine glands of silk worms

CO3 : Describe the management of rearing house

CO4: Explain the incubation of silk worm and chawki rearingpractice

CO5: Describe the of silk work bed cleaning, spinning, harvesting techniques

Learning objectives

1. To understand the morphology and digestive system of silk worms.

2. To understand the excretory system, nervous system and endocrine glands of silk worms .

3. To understand the management of rearing house .

4. To understand the physiology of mulberry plant management of rearing house

5. To understand the techniques of silk worm bed cleaning, spinning harvesting

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PAPER- IV. SILKWORM PHYSIOLOGY AND REARING

Unit-1

1.1 Morphology and structure of silkworm egg, fertilization, cleavage, blastoderm, germ band formation. Diapause development.

1.2 Digestion: structure and function of digestive system; digestive enzyme; process of digestion.

Unit-2

2.1 Excretion: structure and function of excretory system:

2.2 Nervous system; Sense organs: Photoreceptors, Chemoreceptors and Mechanoreceptors.

2.3 Structure and distribution of endocrine glands.

Unit - 3

3.1 Rearing house: Location, orientation, plan and utilities; model rearing house; low-cost rearing house.

3.2 Rearing appliances-shelf and shoot rearing; requirements of rearing appliances (per unit rearing of 100dfls).

3.3 Disinfection of rearing house and rearing appliances; disinfectants formalin, bleaching powder, chlorine dioxide, slaked lime and iodine compounds); rearing and personalhygiene.

Unit-4

4.1 Incubation- definition, requirement of environmental conditions, incubation devices; identification of stages of development; black boxing and itsimportance. Chawki rearing: Preparation; brushing and its methods; types of chawki rearing - traditional and improved method; optimum environmental conditions; methods and frequency of feeding; methods of bed cleaning; spacing; moulting and care duringmoult.

Unit -5

5.1 Late age silkworm rearing: Methods; optimum environmental conditions; feeding quantity and frequency; methods of bed cleaning; spacing; moulting and careduringmoult. Identification of spinning larva; spinning; mounting and mounting density; types of mountages, their advantages and disadvantages; environmental requirements during spinning.

5.2 Harvesting: Time of harvesting; sorting, storage/ preservation, packaging and transport of cocoons; leaf-cocoon ratio; maintenance of rearingrecords.

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PAPER- IV. SILKWORM PHYSIOLOGY AND REARING

MODEL QUESTION PAPER

Time : 3 Hrs **Max Marks : 75**

SECTION –I

Answer any FIVE of the following **5x5 = 25 Marks**

(Draw labelled diagrams wherever necessary)

1. Silkworm egg
2. Blastoderm
3. Photoreceptors
4. Low-cast rearing house
5. Personal hygiene
6. Chowki rearing
7. Moulting
8. Transport of cocoons

SECTION –II

Answer ALL the questions each question carries 10 marks **5x10=50 Marks**

(Draw diagrams wherever necessary)

9. (a) Describe about development of silk worm (or)
   (b) Explain about process of digestion
10. (a) Expalin about structure and function of excretory system(or)
    (b) Write an account on endocrine glands
11. (a) Describe about rearing house in brief (or)
    (b) Write about shelf and shoot rearing
12. (a) Expalin about incubation (or)
    (b) Write about identification of stages of development
13. (a) Describe the harvesting process in brief (or)
    (b) Write about maintenance of rearing records

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PRACTICAL – IV

SILKWORM PHYSIOLOGY AND REARING

Physiology of silkworm:

1. Morphology of silkworm egg and mounting of 7th, 8th and 9th day oldembryos.
2. Estimation of proteins in haemolymph/egg, haemolymph glucoselevel.
3. Morphology of haemocytes in silkworm..
4. Estimation of SDH activity in theeggs/tissue.

Silkwormrearing:

1. Rearing houses- model rearing house and low-cost rearinghouse.
2. Rearingappliances.
3. Disinfection- Types of disinfectants- concentration and dosage requirement; preparation of spray formulation ofdisinfectants.
4. Incubation of silkworm eggs- Methods; black boxing; maintenance of temperature and humidity; Brushing: Methods; chawki rearing; use of paraffin paper and blue polythene sheet.
5. Bed cleaning: use of bed cleaning net and disposal of bed refuses and silkwormlitter.
6. Moulting: Identification of moulting larva, care during moulting; mounting and mounting density; harvesting of cocoons; assessment of cocoons; types ofmountages;
7. Maintenance of records for silkwormrearing.

References:

1. Charsley, S.R. (1982). Culture and Sericulture. Academic Press Inc., New York,U.S.A

2. Chowdhury, S.N. (1998) Muga Culture. Central Silk Board, Bangalore,India

3. Dokuhon, Z.S. (1998). Illustrated Textbook on Sericulture. Oxford & IBH publishing Co.,Pvt. Ltd.Calcutta.

4. Hamamura, Y. (2001). Silkworm rearing on Artificial Diet. Oxford & IBH publishing Co., Pvt. Ltd. NewDelhi.

5. HasaoAruga (1994). Principles of Sericulture (Translated from Japanese) Oxford & IBH publishing Co., Pvt. Ltd. NewDelhi.

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IV SEMESTER

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PAPER- V. DISEASES AND PESTS OF SILKWORM

Course Outcomes: By the completion of the course the graduate should able to –

CO1 : Explain the different silk worm diseases caused by protozoans

CO2 : Describe the bacterial diseases of silk worm

CO3 : Describe the viral diseases of silk worm

CO4: Explain the fungal diseases of silk worm

CO5: Describe life history of cocoon pests, control & prevention

Learning objectives

1. To understand the different silk worm diseases caused by protozoans
2. To understand the bacterial diseases of silk worm
3. To understand the viral diseases of silk worm.
4. To understand the fungal diseases of silk worm
5. To understand the life history of cocoon pests prevention , control measures

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IV SEMESTER

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PAPER- V. DISEASES AND PESTS OF SILKWORM

Unit-1

1.1Introduction; classification of silkworm diseases.

1.2 Protozoan disease – symptomatology, structure of pebrine spore, life cycle of *Nosemabombycis*, source, mode of infection and transmission, cross infectivity, prevention and control.

Unit – 2

2.1 Bacterial diseases - causative agents, symptoms, factors influencing flacherie, source, mode of infection and transmission prevention and control.

Unit-3

3.1 Viral diseases (grasserie, infectious flacherie, cytoplasmic polyhedrosis, densonucleosis and gattine)- causative agents- symptoms – sources, mode of infection and transmission- prevention and control.

Unit – 4

4.1 Fungal diseases: white and green muscardine and aspergillosis- causative agentssymptoms - structure and life cycle of fungal pathogen- mode of infection and transmission- prevention and control. Integrated management of silkworm diseases.

Unit-5

5.1 Life cycle of Indian uzifly; seasonal occurrence; oviposition and host-age preference; nature and extent of damage; prevention and control; integrated management of Indian uzifly. Cocoon pests of silkworm:

5.2 Dermestid beetle- life cycle; nature and extent of damage; prevention and control measures.

5.3 Brief account of methods of pest control: Cultural, mechanical, physical, legislative (Quarantine), chemical, genetical / autocidal, biological and IPM.

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PAPER- V. DISEASES AND PESTS OF SILKWORM

MODEL QUESTION PAPER

Time : 3 Hrs **Max Marks : 75**

SECTION –I

Answer any FIVE of the following **5x5 = 25 Marks**

(Draw labelled diagrams wherever necessary)

1. Infection
2. Control measures
3. Causative agents
4. Grasserie
5. Symptoms
6. Write muscardine
7. Uzifly
8. Cocoon pests

SECTION –II

Answer ALL the questions each question carries 10 marks **5x10=50 Marks**

(Draw diagrams wherever necessary)

9. (a) Write about silk worm disease in brief (or)
   (b) Describe the life cycle of Nosemabombycis
10. (a) Write an account on mode of infection and transmission (or)
    (b) Write about causative agents and symptoms of bacterial diseases
11. (a) Write about infectious flacherie, cytoplasmic polyhedroisis (or)
    (b) Describe the prevention and control of viral diseases
12. (a) Explain the structure and Life cycle of fungal pathogen (or)
    (b) Write an account on Integrated management of silkworm diseases
13. (a) Describe the seasonal occurance, Oviposition and host-age of Indian Uzifly (or)
    (b) Write about the Dermestid beetle life cycle

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IV SEMESTER

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PRACATICAL PAPER – V

DISEASES AND PESTS OF SILKWORM

1. Identification of different diseased silkworms based on externalsymptoms (grasserie,flacherie, muscardine andpebrine).
2. Identification of pathogens associated with silkwormdiseases.
3. Staining and preparation of temporary slides of bacteria, spores of pebrine, polyhedraof nuclear polyhedrosis virus and mycelial mat ofmuscardine.
4. Methods of application of silkworm bed disinfectants for management ofsilkworm diseases.
5. Life cycle of Uzi fly; Identification of uzi-infested silkworms andcocoons.
6. Life cycle of dermestid beetles: Dermestid infested silkworm cocoons and estimationof incidence.

References:

1. Rajan, R.K. Hemanth Raju 2005, Text Book on silkworm rearing, Central SilkBoard, Bangalore.

2. Techniques of Silkworm rearing in the tropics. Economic and Social commission of Asiaand the Pacific. United Nations, New York.1993.